

WHAT IS CLAIMED IS:

1. A laser head adapted to irradiate an interaction region of an inhabitable structure with laser light to remove material from the structure, the laser head comprising:

a housing;

a connector coupled to the housing and optically coupled to a laser generator, the connector adapted to transmit laser light from the laser generator;

at least one optical element contained in the housing and optically coupled to the connector, the optical element adapted to receive laser light from the connector; and

a containment plenum coupled to the housing, the containment plenum optically coupled to the optical element to receive the laser light from the optical element, the containment plenum adapted to confine the material and remove the material from the interaction region resulting from irradiating the structure with the laser light.

2. The laser head of Claim 1, wherein the housing comprises a distal portion coupled to the connector, an angle portion coupled to the distal portion, and a proximal portion coupled to the containment plenum, and the at least one optical element comprises a mirror in the angle portion.

3. The laser head of Claim 2, wherein the mirror is either air-cooled or water-cooled.

4. The laser head of Claim 2, wherein the mirror is mounted on an adjustable assembly in the angle portion, whereby alignment of the laser light can be optimized by adjusting the assembly.

5. The laser head of Claim 2, wherein the distal portion comprises a generally straight first tube through which laser light propagates to the mirror, and the proximal portion comprises a generally straight second tube through which the laser light from the mirror propagates.

6. The laser head of Claim 5, wherein the second tube is substantially perpendicular to the first tube.

7. The laser head of Claim 5, wherein the housing further comprises a second angle portion coupled to the first angle portion and the proximal portion, the at least one optical element further comprising a second mirror in the second angle portion, whereby laser light propagates through the first tube, is reflected by the first mirror, is reflected by the second mirror, and propagates through the second tube.

8. The laser head of Claim 7, wherein the first angle portion is rotatably coupled to the distal portion.

9. The laser head of Claim 7, wherein the first angle portion is rotatably coupled to the second angle portion.

10. The laser head of Claim 7, wherein the second tube is substantially parallel to, and displaced from, the first tube.

11. The laser head of Claim 7, wherein the second mirror is mounted in an adjustable assembly in the second angle portion, whereby alignment of the laser light can be optimized by adjusting the assembly.

12. The laser head of Claim 1, wherein the at least one optical element further comprises a lens in the distal portion through which the laser light propagates.

13. The laser head of Claim 12, wherein the lens is mounted in an adjustable assembly in the distal portion, whereby alignment and focus of the laser light can be optimized by adjusting the assembly.

14. The laser head of Claim 1, wherein the connector is optically coupled to the laser generator via an optical fiber.

15. The laser head of Claim 1, wherein the at least one optical element comprises a lens in the connector, the lens collimating the laser light.

16. The laser head of Claim 15, wherein the lens is mounted in an adjustable assembly in the connector, whereby alignment and focus of the laser light can be optimized by adjusting the assembly.

17. The laser head of Claim 1, wherein the optical element is either air-cooled or water-cooled.

18. The laser head of Claim 1, further comprising a sensor adapted to measure the relative distance between the laser head and the interaction region.

19. A laser head adapted to irradiate an interaction region of an inhabitable structure with laser light to remove material from the structure, the laser head comprising:

means for connecting the laser head to a laser generator;

means for receiving the laser light from the laser generator;

means for guiding the laser light to the interaction region; and

means for confining the material and removing the material from the interaction region.

20. A method of irradiating an interaction region of an inhabitable structure with laser light to remove material from the structure, the method comprising:

connecting a laser head to a laser generator;

receiving the laser light from the laser generator;

guiding the laser light to the interaction region of the structure; and

confining the material and removing the material from the interaction region.